

Work Order ID 144437

April 18, 2016 9:48:51 AM

144437

To ship complete
May 6

Page 1

Item ID: D4766-041

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Skidtube Assembly

Start Date: 4/20/2016 Start Qty: 1.00 *1*

Cust Item ID:

Required Date: 4/29/2016 Req'd Qty: 1.00 *1*

Customer:

Reference:

Approvals: Process Plan: SK 20160418 Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start *NR1*
Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D4766	D								

110

0.00

110

CNC Bend 1

CNC Delta 100 Bender

Memo

0.00

*****ROUTE NEED TO BE REVISE AS PER THE LATES REV
PROCESS*****

1- Bend FWD end as per dwg and folio

2- Cut FWD end as per dwg using DT8185

VERIFY MESUREMENT*

16-4-18

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td style="border: none;">Skid-tube ☐</td> <td style="border: none;">Cross tube ☐</td> <td style="border: none;">Water Jet ☐</td> <td style="border: none;">Engineering ☐</td> </tr> <tr> <td style="border: none;">Machining ☐</td> <td style="border: none;">Small Fab ☐</td> <td style="border: none;">Prod. Eng. Coord. ☐</td> <td style="border: none;">Quality ☐</td> </tr> <tr> <td style="border: none;">Thermoforming ☐</td> <td style="border: none;">Finishing ☐</td> <td style="border: none;">Rec/Store/Packaging ☐</td> <td style="border: none;">Other ☐</td> </tr> <tr> <td style="border: none;">Large Fab ☐</td> <td style="border: none;">Composite ☐</td> <td style="border: none;">Supplier ☐</td> <td></td> </tr> </table>				Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐																																																	
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Work Order ID 144437

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144437

Page 2

Item ID: D4766-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Skidtube Assembly
Start Date: 4/20/2016 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 4/29/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120	Skidtubes	0.00							
120									
Skidtubes	Memo	0.00							
Skidtubes	1- Cut Aft end as per dwg D4766 DP 16-4-18								
	2- Deburr ends								
	3-Drill Aft & Fwd Cap holes using DT8678 & DT8901 ***DO NOT OPEN AFT CAP HOLES***								
	4- Locate DT85 to with #30 drill in Ground wire hole, then Pilot Drill all X-Bolt holes using #30" drill. & Drill Ground wire hole on top of Tube. section 0-D								
	5- Open ground wire hole .297" (1) place and detail "i" (2) place.								
	6- Open Aft & Fwd Cap holes using 0.208" drill.								
	7- Deburr holes.								
140	QC5- Inspect part completeness to step on W/O	0.00							
140									
QC	Memo	0.02							
Quality Control									

D 16-04-19 **DAS 9 9-89**

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval 	
Description Work Order Deviation				Disposition					
								Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	

Root Cause				FAULT CATEGORY							
Environment	☐	No Re-verification	☐	Pressure/Forced	☐	Temperature/Cure	☐	Power Loss/Surge	☐	Positioned Wrong	☐
Design	☐	Operator	☐	Bending	☐	Set-up	☐	Folio/Program	☐	Outside Dimensions	☐
Doc/Data	☐	Offset/Setup	☐	Centre Not Concentric	☐	BOM/Route	☐	Grain	☐	Over/Under tolerance	☐
Equip/Tooling	☐	Supplier	☐	Cracks	☐	Broken/Damage/Defect	☐	Weld	☐	Part Incorrect	☐
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Substation	☐	Process Improvement	☐	Marks/Chatter	☐	Drill Holes	☐	Misaligned/off center	☐	Turning Sequence	☐
Past Expiry Date	☐	Manufacturing Process	☐	OTHER : _____							
Misidentified	☐	Past Due	☐								

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Page 3

Item ID: D4766-041 Accept ***N900040100*** Setup Start ***NS1***
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Item Name: Skidtube Assembly
Start Date: 4/20/2016 Start Qty: 1.00 ***1*** Cust Item ID:
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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150	Chemical Conversion Coat per QSI005 4.1	0.00							
150									
HandFinish	Memo	0.00							
Hand Finishing									
160	QC7-Inspect Chemical Conversion Coat	0.00							
160									
QC	Memo	0.01							
Quality Control									

16-4-20 JH

DAS
03
9-88 DP 16-4-20

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval	
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
		OTHER : ☐							

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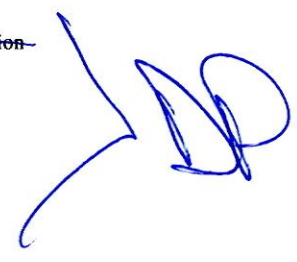
144437

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Item ID: D4766-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Skidtube Assembly
Start Date: 4/20/2016 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 4/29/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170	Skidtubes	0.00							
170									
Skidtubes	Memo	0.00							
Skidtubes	1- Open holes to section H-H and prepare for welding as per dwg D4766 section H-H.								
	1- Bond web as per Dwg D4766 & OSI 015								
	A/R 241 Sike Flex Batch: <u>M134487</u>								
	Exp Date: <u>16-12-8</u>								
	start time: <u>1130 AM</u>								
	end time: _____								
	NOTE: 35.877" From Aft end as per dwg D4766. sheet 5								
180	QC5- Inspect part completeness to step on W/O	0.00							
180									
QC	Memo	0.02							
Quality Control									

 16-4-20 PTO 

DQA: DA Date: Jan 4 2017
 QA Closed: DA Date: DEC 13 2016

WORK ORDER NON-CONFORMANCE / UPDATE



Work Order update only ☐

Work Order: <u>144437</u> Part No. <u>D4766-0A</u> NCR No. <u>16-6158</u>		DISPOSITION Rework ☐ Scrap ☒ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☒ Cross tube ☐ Machining ☐ Small Fab ☐ Thermoforming ☐ Finishing ☐ Large Fab ☐ Composite ☐ Water Jet ☐ Engineering ☐ Prod. Eng. Coord. ☐ Quality ☐ Rec/Store/Packaging ☐ Other ☐ Supplier ☐							
Date: <u>16-5-9</u>		Step #: <u>170</u>		QTY Effective: <u>1</u>			MRB (QSI042) Approval DAS 9 9-89 <u>16-05-12</u> Completed By <u>DA</u> <u>16-11-18</u>				
Description Work Order Deviation				Disposition				Lead hand / Supervisor Approval Verification DAS 9 9-89 <u>16-05-12</u> QC / QA Coordinator Approval DAS 9 9-89 <u>16-05-12</u>			
w/o said prepare for welding. There is no welding as per drawing D4766 REV D. R.C. route				Scrap. Remove I-Beam + Re-stock <u>B130107</u> QTY: 1 Remove welding operation on Work orders (route)							
Root Cause Environment ☐ No Re-verification ☐ Design ☐ Operator ☐ Doc/Data ☒ Offset/Setup ☐ Equip/Tooling ☐ Supplier ☐ Handling/Pre ☐ Training ☐ Material ☐ Use for Testing ☐ Internal Transport ☐ Poor Information ☐ Tribal Knowledge ☐ Rushing ☐ LOA ☒ Product Improvement ☐ Substation ☐ Process Improvement ☐ Past Expiry Date ☐ Manufacturing Process ☐ Misidentified ☐ Past Due ☐				FAULT CATEGORY Pressure/Forced ☐ Temperature/Cure ☐ Power Loss/Surge ☐ Positioned Wrong ☐ Bending ☐ Set-up ☐ Folio/Program ☐ Outside Dimensions ☐ Centre Not Concentric ☒ BOM/Route ☐ Grain ☐ Over/Under tolerance ☐ Cracks ☐ Broken/Damage/Defect ☐ Weld ☐ Part Incorrect ☐ Crimp/Kink/Ripple/Wave ☐ Inspection Incomplete/Unqualified ☐ Wrong Stock Pulled ☐ Part Lost/Missing ☐ Cuffs ☐ Contamination ☐ Out of Sequence ☐ Part Moved ☐ Crushing ☐ Countersink ☐ Off-set ☐ Drawing ☐ Heat Treat ☐ Cut Too Short ☐ Misabeled ☐ Finish ☐ Wave/Twist in Tube ☐ Instructions Incomplete/Unclear ☐ Fit/Function ☐ Misread ☐ Marks/Chatter ☐ Drill Holes ☐ Misaligned/off center ☐ Turning Sequence ☐							
OTHER: ☐											

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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
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Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
185		0.00							
185									
Skidtubes	Memo	0.00							
Skidtubes	1- Bend aft tube as per dwg VERIFY HEIGHT								
	2- Remove bending marks.								
	3- Prepare and install D2973 spacer for welding as per dwg and section H-H A/R Aluminum rod:								
	4- Grind weld flush and pass drill to remove spill over								
	5- Open X-Bolt holes to size as per Dwg D4766 and detail K + 4 $\varnothing .750$ holes.								
	6- Drill Rivet Holes as per Dwg D4766 Using DT10065								
	7- Deburr Rivet holes.								
	8- Seal all faying surfaces using proseal and rivet Doubler as per Dwg D4766. A/R Proseal Batch: _____ 12H CURE TIME START TIME: _____								
	9- Swage x-bolt spacers as per Dwg D4766 and section D-DEC								
	10- Trim/Grind flush per QSI 002								
	12- Deburr and blow out chips from inside of tube.								
	11- Swage x-bolt spacers as per dwg 4766 Section 66 Trim + grind flush open thru hole to $\varnothing .625$								

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QS1042) Approval 	
Description Work Order Deviation				Disposition					
								Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	

Root Cause		FAULT CATEGORY									
Environment	☐	No Re-verification	☐	Pressure/Forced	☐	Temperature/Cure	☐	Power Loss/Surge	☐	Positioned Wrong	☐
Design	☐	Operator	☐	Bending	☐	Set-up	☐	Folio/Program	☐	Outside Dimensions	☐
Doc/Data	☐	Offset/Setup	☐	Centre Not Concentric	☐	BOM/Route	☐	Grain	☐	Over/Under tolerance	☐
Equip/Tooling	☐	Supplier	☐	Cracks	☐	Broken/Damage/Defect	☐	Weld	☐	Part Incorrect	☐
Handling/Pre	☐	Training	☐	Crimp/Kink/Ripple/Wave	☐	Inspection Incomplete/Unqualified	☐	Wrong Stock Pulled	☐	Part Lost/Missing	☐
Material	☐	Use for Testing	☐	Cuffs	☐	Contamination	☐	Out of Sequence	☐	Part Moved	☐
Internal Transport	☐	Poor Information	☐	Crushing	☐	Countersink	☐	Off-set	☐	Drawing	☐
Tribal Knowledge	☐	Rushing	☐	Heat Treat	☐	Cut Too Short	☐	Mislabeled	☐	Finish	☐
LOA	☐	Product Improvement	☐	Wave/Twist in Tube	☐	Instructions Incomplete/Unclear	☐	Fit/Function	☐	Misread	☐
Substation	☐	Process Improvement	☐	Marks/Chatter	☐	Drill Holes	☐	Misaligned/off center	☐	Turning Sequence	☐
Past Expiry Date	☐	Manufacturing Process	☐	OTHER :							
Misidentified	☐	Past Due	☐								

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width: 100%; border: none;"> <tr> <td style="border: none;">Skid-tube ☐</td> <td style="border: none;">Cross tube ☐</td> <td style="border: none;">Water Jet ☐</td> <td style="border: none;">Engineering ☐</td> </tr> <tr> <td style="border: none;">Machining ☐</td> <td style="border: none;">Small Fab ☐</td> <td style="border: none;">Prod. Eng. Coord. ☐</td> <td style="border: none;">Quality ☐</td> </tr> <tr> <td style="border: none;">Thermoforming ☐</td> <td style="border: none;">Finishing ☐</td> <td style="border: none;">Rec/Store/Packaging ☐</td> <td style="border: none;">Other ☐</td> </tr> <tr> <td style="border: none;">Large Fab ☐</td> <td style="border: none;">Composite ☐</td> <td style="border: none;">Supplier ☐</td> <td></td> </tr> </table>						Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐																						
Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐																						
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐																						
Large Fab ☐	Composite ☐	Supplier ☐																							
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval																		
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval																	
Root Cause		FAULT CATEGORY																							
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐																				
		OTHER :																							

Work Order ID 144437

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144437

Page 7

Item ID: D4766-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Skidtube Assembly
Start Date: 4/20/2016 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 4/29/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230	QC14- Inspect Spray Paint	0.00							
230									
QC	Memo	0.01							
Quality Control									
260	HandFinishing	0.00							
260									
HandFinish	Memo	0.00							
Hand Finishing	1- Install Ground Wire inserts as per Dwg D4766.								
	2-Inspect for Foreign objects								
	3- Install Fwd & Aft caps as per Dwg D4766 and Detail "A" & "B". Fasterner must be install wet as per note (9).								
	A/R 241 Sika Flex Batch: _____ Exp Date: _____								
	4- Assemble o'ring to plug as per dwg D3492-055 and apply o'ring lube A/R 55-o'ring lube batch: _____								
	5- Wing Walk as per Dwg D4766 and QSI 005 4.4 Batch: _____								

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

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Quality Control

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval 		
Description Work Order Deviation				Disposition					
								Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	

Root Cause			FAULT CATEGORY								
Environment	☐	No Re-verification	☐	Pressure/Forced	☐	Temperature/Cure	☐	Power Loss/Surge	☐	Positioned Wrong	☐
Design	☐	Operator	☐	Bending	☐	Set-up	☐	Folio/Program	☐	Outside Dimensions	☐
Doc/Data	☐	Offset/Setup	☐	Centre Not Concentric	☐	BOM/Route	☐	Grain	☐	Over/Under tolerance	☐
Equip/Tooling	☐	Supplier	☐	Cracks	☐	Broken/Damage/Defect	☐	Weld	☐	Part Incorrect	☐
Handling/Pre	☐	Training	☐	Crimp/Kink/Ripple/Wave	☐	Inspection Incomplete/Unqualified	☐	Wrong Stock Pulled	☐	Part Lost/Missing	☐
Material	☐	Use for Testing	☐	Cuffs	☐	Contamination	☐	Out of Sequence	☐	Part Moved	☐
Internal Transport	☐	Poor Information	☐	Crushing	☐	Countersink	☐	Off-set	☐	Drawing	☐
Tribal Knowledge	☐	Rushing	☐	Heat Treat	☐	Cut Too Short	☐	Mislabeled	☐	Finish	☐
LOA	☐	Product Improvement	☐	Wave/Twist in Tube	☐	Instructions Incomplete/Unclear	☐	Fit/Function	☐	Misread	☐
Substation	☐	Process Improvement	☐	Marks/Chatter	☐	Drill Holes	☐	Misaligned/off center	☐	Turning Sequence	☐
Past Expiry Date	☐	Manufacturing Process	☐	OTHER : _____							
Misidentified	☐	Past Due	☐								

Work Order ID 144437

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144437

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Item ID: D4766-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Skidtube Assembly
Start Date: 4/20/2016 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 4/29/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
300 *300* Packaging Packaging	Identify as per dwg & Stock Location: _____ Packaging Memo	0.00 0.01							
310 *310* QC Quality Control	QC21- Final Inspection - Work Order Release Memo	0.00 0.10							

DAS
21
9-59

NOV 28 2016

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QS1042) Approval Completed By _____ Lead hand / Supervisor Approval Verification _____ QC / QA Coordinator Approval _____		
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐		OTHER : _____					

Picklist Print

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Page 1

Work Order ID: 144437

144437

Parent Item: D4766-041

D4766-041

Parent Item Name: Skidtube Assembly

Start Date: 4/20/2016

Required Date: 4/29/2016

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP REV:A 13.04.17 NEW ISSUE DD VERF:JLM IPP REV:B
13.08.08 PB2 DD VERF:JLM IPP REV:B 13.08.26
PB3 DD VERF:JLM IPP REV:C 13.11.14 AS PER
DWG REV.B DD VERF:JLM IPP REV:D 15.06.10 AS PER DWG
REV.C DD VERF:JLM IPP REV:E 16.03.23 AS PER DWG REV.D
DD VERF:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
AN526C1032R10		Purchased	No				Each	58.0000		2			
AN526C1032R10									**				
Screw													
				<u>Location</u>				<u>Loc Qty</u>		<u>Loc Code</u>			
				ST328				58					
				m133234				58					
D2962-190		Manufactured	No				Each	54.0000		1			
D2962-190									**				
Extrusion													
				<u>Location</u>				<u>Loc Qty</u>		<u>Loc Code</u>			
				HALL				11					
				100121				11					
				SHED				43					
				100121				43					
D2965-3		Manufactured	No				Each	88.0000		1			
D2965-3									**				
Cap													
				<u>Location</u>				<u>Loc Qty</u>		<u>Loc Code</u>			
				FP001				88					
				126369				88					

16-4-18

1

Picklist Print

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Page 2

Work Order ID: 144437

144437

Parent Item: D4766-041

D4766-041

Parent Item Name: Skidtube Assembly

Start Date: 4/20/2016

Required Date: 4/29/2016

Start Qty: 1.00

Required Qty: 1.00

D2973

Manufactured No

Each

6.0000

2

D2973

Cross Bolt Spacer

Location

Loc Qty

Loc Code

LG001

6

123939

6

D5085-1

Manufactured No

Each

6.0000

D5085-1

Web

Location

Loc Qty

Loc Code

LG

6

130107

6

D5304-1

Manufactured No

Each

17.0000

D5304-1

Crossbolt Spacer

Location

Loc Qty

Loc Code

prelim

17

137050

17

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Page 2

Picklist Print

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Page 3

Work Order ID: 144437

144437

Parent Item: D4766-041

D4766-041

Parent Item Name: Skidtube Assembly

Start Date: 4/20/2016

Required Date: 4/29/2016

Start Qty: 1.00

Required Qty: 1.00

NAS1149C0332R

Purchased

No

Each

3,839.000

5

NAS1149C0332R******

WASHER

LocationLoc QtyLoc Code

FP001

2122

m132262

4

m132930

1004

m134063

986

m134073

128

GA

261

m133284

261

ST266

1456

m134474

456

m134574

1000

D4686-1

Manufactured

No

Each

60.0000

11

D4686-1******

Spacer

LocationLoc QtyLoc Code

LG001

45

107104

43

97772

2

LG002

15

131160

13

97772

2

D4753-1

Manufactured

No

Each

111.0000

22

D4753-1******

Doubler

LocationLoc QtyLoc Code

LG002

111

127246

9

128557

42

128887

60

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Shop Packet Print

Page 3

Picklist Print

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Page 4

Work Order ID: 144437

144437

Parent Item: D4766-041

D4766-041

Parent Item Name: Skidtube Assembly

Start Date: 4/20/2016

Required Date: 4/29/2016

Start Qty: 1.00

Required Qty: 1.00

AELS-1032-130 AELS8-1032-130 Purchased No

Each 0.0000 3

AFI S-1032-130

Rivnut

AN3C4A Purchased No

Each 1,031.000 3

AN3C4A

Bolt

Location

Loc Qty

Loc Code

FG 20

122814 20

FP001 73

M133440 7

M134396 66

OVER002 750

M134502 200

M134509 300

M134606 250

ST350 188

M134134 18

M134396 170

MS20601-AD4W3 Purchased No

Each 397.0000 44

MS20601-AD4W3

Rivet

Location

Loc Qty

Loc Code

LG001 98

m132551 98

ST308 299

m133922 99

m134370 200

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Shop Packet Print

Page 4

Picklist Print

April 18, 2016 9:48:56 AM

Page 5

Work Order ID: 144437

144437

Parent Item: D4766-041

D4766-041

Parent Item Name: Skidtube Assembly

Start Date: 4/20/2016

Required Date: 4/29/2016

Start Qty: 1.00

Required Qty: 1.00

D2965

Manufactured No

Each

76.0000

1

D2965

Cap

Location

Loc Qty

Loc Code

FP001

76

127852

76

AN3C5A

Purchased

No

Each

1,233.000

2

AN3C5A

Bolt

Location

Loc Qty

Loc Code

FG

5

122800

5

FP001

172

M133686

172

OVER002

1000

M134502

1000

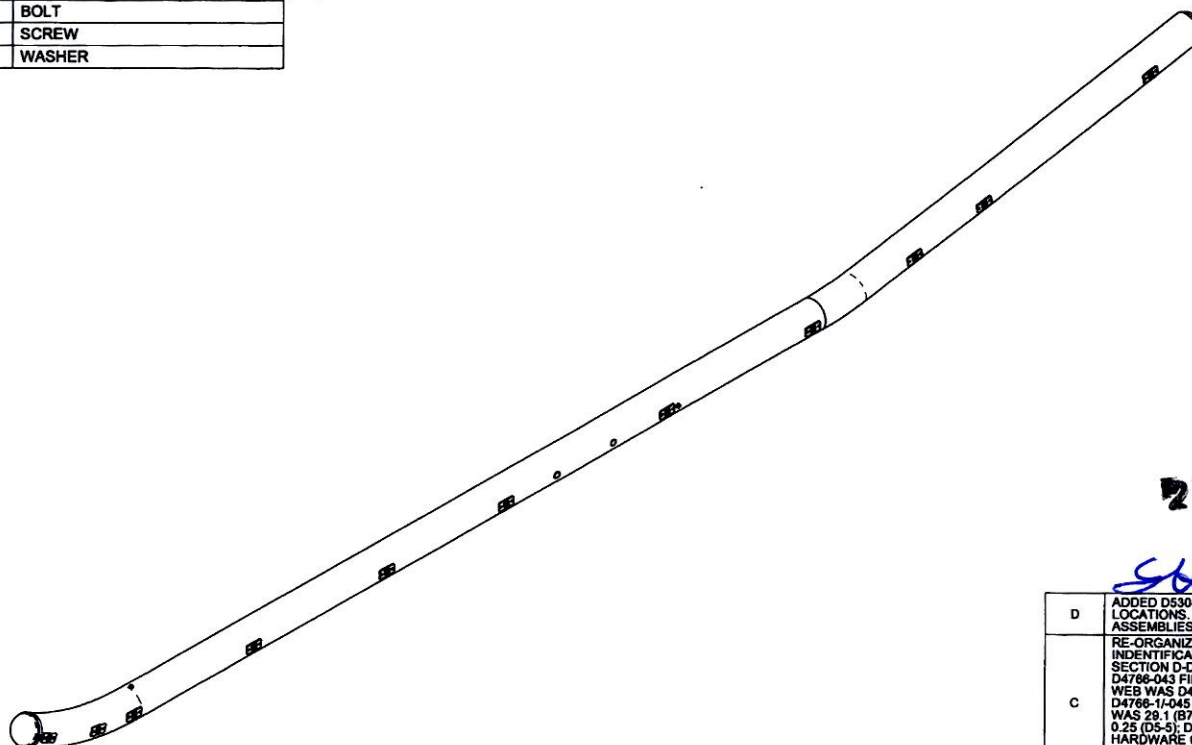
ST350

56

M133234

56

ITEM	QTY -041	P/N	DESCRIPTION
	X	D4766-041	SKIDTUBE
1	1	D2965	CAP
2	1	D2965-3	CAP
3	1	D4766-043	SKIDTUBE SUB ASSY
4	2	AN3C5A	BOLT
5	2	AN526C1032R10	SCREW
6	2	NAS1149C0332R	WASHER

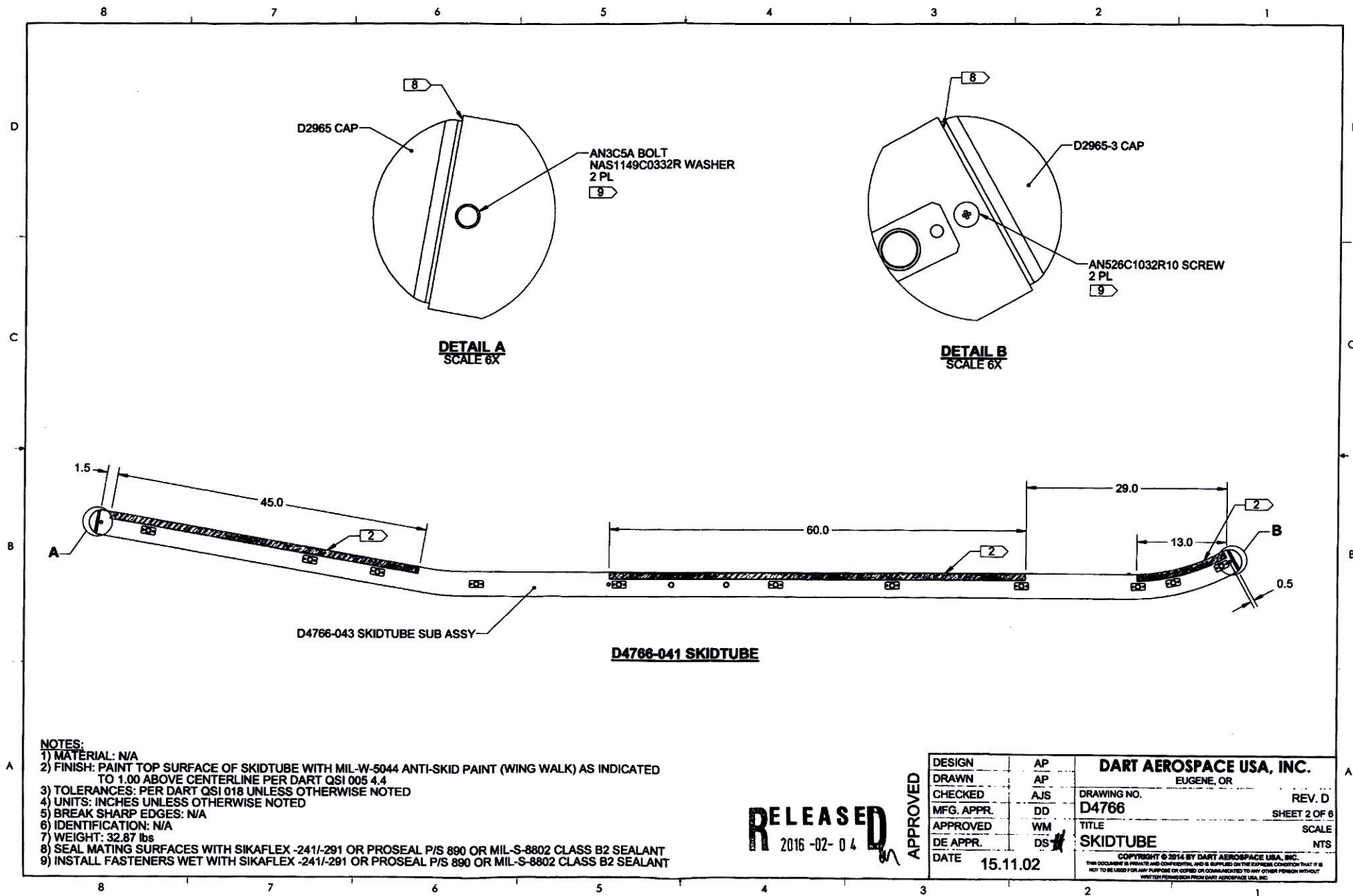


D4766-041 SKIDTUBE

D	ADDED D5304-1 SWAGED CROSSBOLT SPACER FOR GHL LOCATIONS. ADDED SHT 1. REMOVED D3492-055 PLUG ASSEMBLIES, RE-ORDER SECTIONS	AP	15.11.02
C	RE-ORGANIZED SECTION/DETAIL VIEWS ALL SHTS; IDENTIFICATION MOVED FROM SHT 1 TO SHT 5; SECTION D-D AND DETAIL K 11PL WAS 12PL; MODIFIED D4766-043 FINISH; Ø0.750 WAS Ø0.758 (B4-3); D5085-1 WEB WAS D4766-1; VARIOUS MINOR DIM CHANGES TO D4766-1/-045 TO MATCH STD SKIDTUBE PROFILE; 35.9 WAS 29.1 (B7-4); GROUNDING FASTENER MOVED AFT 0.25 (D5-5); D2965 HARDWARE AND GROUNDING HARDWARE CHANGED TO STAINLESS; ADD NOTE 9 (SHT 1) AFT FLOAT HOLES NOW DIMENSIONED AFTER AFT BEND	AP	15.02.25
B	FWD CAP WAS D2965 NOW D2965-3. D3492-055 WAS D3492-051. SWAGING NOW 0.850 WAS 0.851 (C7-2). ADDED BENDING DETAIL TO SHEET 4. MATERIAL D2962-190 WAS D2962-185 (A7-5). ADDED DETAIL L ON SHT 3. ADDED TOP VIEW ON SHT 5. REPLACED D4766-1 WITH D4927-041 ON SHT 3. GROUND HANDLING THRU HOLES SPACERS NOW WELDED. SEE SECTION H-H (B4-2). RE-ORDERED SECTIONS AND DETAILS.	AP	13.08.08
A	NEW ISSUE	AP	13.02.13
REV.	DESCRIPTION	BY	DATE
DESIGN	AP	DART AEROSPACE USA, INC. EUGENE, OR	
DRAWN	AP		
CHECKED	AJS	DRAWING NO.	REV. D
MFG. APPR.	DD	D4766	SHEET 1 OF 6
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	SKIDTUBE	NTS
DATE	15.11.02	COPYRIGHT © 2014 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

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2016-02-04
ECN 16-514

APPROVED



NOTES:

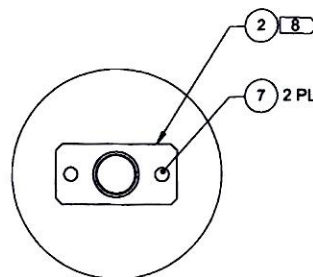
- 1) MATERIAL: N/A
- 2) FINISH: PAINT TOP SURFACE OF SKIDTUBE WITH MIL-W-5044 ANTI-SKID PAINT (WING WALK) AS INDICATED TO 1.00 ABOVE CENTERLINE PER DART QSI 005 4.4
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: 32.87 lbs
- 8) SEAL MATING SURFACES WITH SIKAFLEX -241/-291 OR PROSEAL P/S 890 OR MIL-S-8802 CLASS B2 SEALANT
- 9) INSTALL FASTENERS WET WITH SIKAFLEX -241/-291 OR PROSEAL P/S 890 OR MIL-S-8802 CLASS B2 SEALANT

RELEASED
2016-02-04

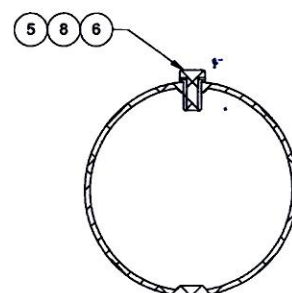
APPROVED

DESIGN	AP	DART AEROSPACE USA, INC.	
DRAWN	AP	EUGENE, OR	
CHECKED	AJS	DRAWING NO.	REV. D
MFG. APPR.	DD	D4766	SHEET 2 OF 6
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	SKIDTUBE	NTS
DATE	15.11.02	COPYRIGHT © 2014 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL, AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

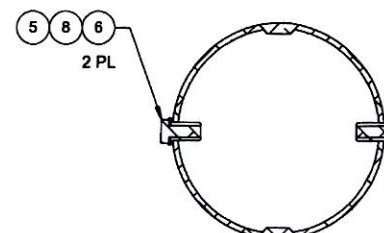
ITEM	QTY	P/N	DESCRIPTION
	X	D4766-043	SKIDTUBE SUB ASSY
1	11	D4686-1	SPACER
2	22	D4753-1	DOUBLER
3	1	D4766-045	SKIDTUBE SUB ASSY
4	2	D5304-1	CROSSBOLT SPACER
5	3	AELS-1032-130	INSERT
6	3	AN3C4A	BOLT
7	44	MS20601AD4W3	RIVET, BLIND, CSK
8	3	NAS1149C0332R	WASHER



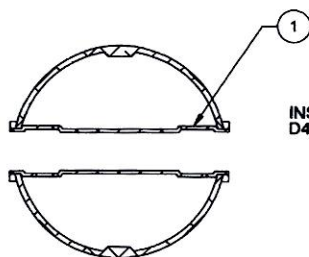
DETAIL E
SCALE 6X
22 PL



SECTION D-D
SCALE 6X



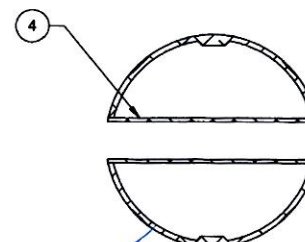
SECTION F-F
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SECTION C-C
SCALE 6X
11 PL

INSTALL D4686-1 SPACER AFTER INSTALLING
D4753-1 DOUBLERS AS FOLLOWS (11 PL)

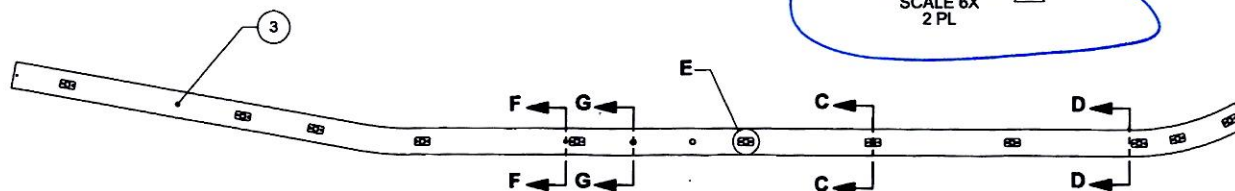
1. INSERT D4686-1 SPACER
2. SWAGE TO $\phi 0.650 +0.010/-0.000$ X 1.0 DEEP PER QSI 002
3. TRIM/GRIND FLUSH PER QSI 002



SECTION G-G
SCALE 6X
2 PL

INSTALL D5304-1 SPACER AS FOLLOWS (2 PL)

1. INSERT D5304-1 SPACER
2. SWAGE TO $\phi 0.565 +0.005/-0.000$ X 1.0 DP PER QSI 002
3. OPEN THRU HOLE TO $\phi 0.625$



D4766-043 SKIDTUBE SUB ASSY

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIME (REF 4.2.1.3.3) AND PAINT WHITE PER DART QSI 005 4.2
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 31.69 lbs
- 8) SEAL FAYING SURFACES USING PROSEAL P/S 890 OR MIL-S-8802 CLASS B2 SEALANT

RELEASED
2016-02-04

APPROVED

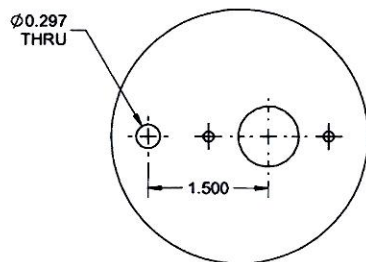
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CHECKED	AJS
MFG. APPR.	DD
APPROVED	WM
DE APPR.	DS
DATE	15.11.02

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EUGENE, OR

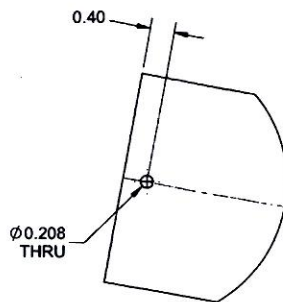
DRAWING NO.
D4766
TITLE
SKIDTUBE
REV. D
SHEET 3 OF 6
SCALE
NTS

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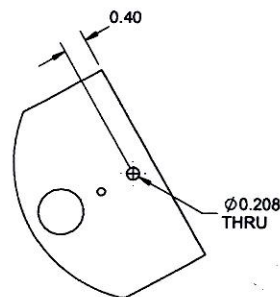
ITEM	QTY	P/N	DESCRIPTION
	X	D4766-045	SKIDTUBE SUB ASSY
1	1	D4766-1	SKIDTUBE
2	1	D5085-1	WEB



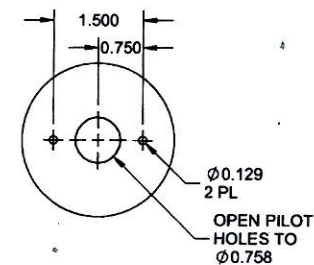
DETAIL I
SCALE 4X



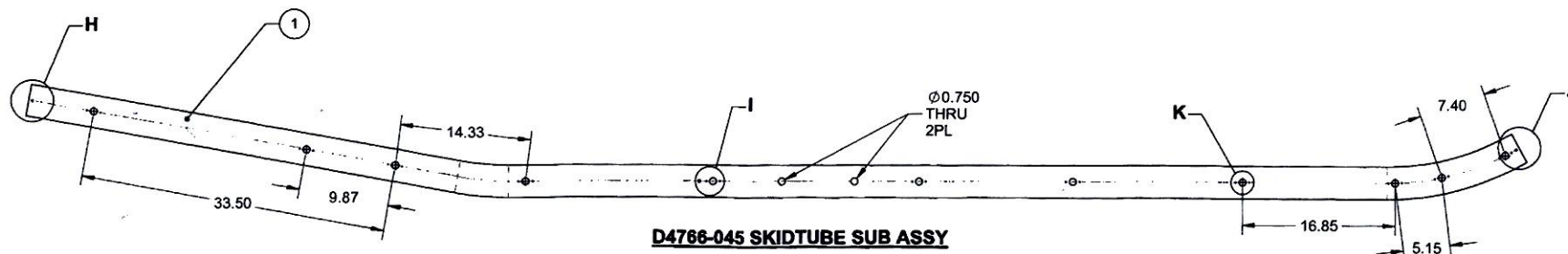
DETAIL H
SCALE 6X



DETAIL J
SCALE 6X



DETAIL K
11 PL (BOTH SIDES)
SCALE 6X



D4766-045 SKIDTUBE SUB ASSY

- NOTES:**
- 1) MATERIAL: N/A
 - 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
 - 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
 - 4) UNITS: INCHES UNLESS OTHERWISE NOTED
 - 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
 - 6) IDENTIFICATION: NONE
 - 7) WEIGHT: 31.69 lbs

RELEASED
2016-02-04

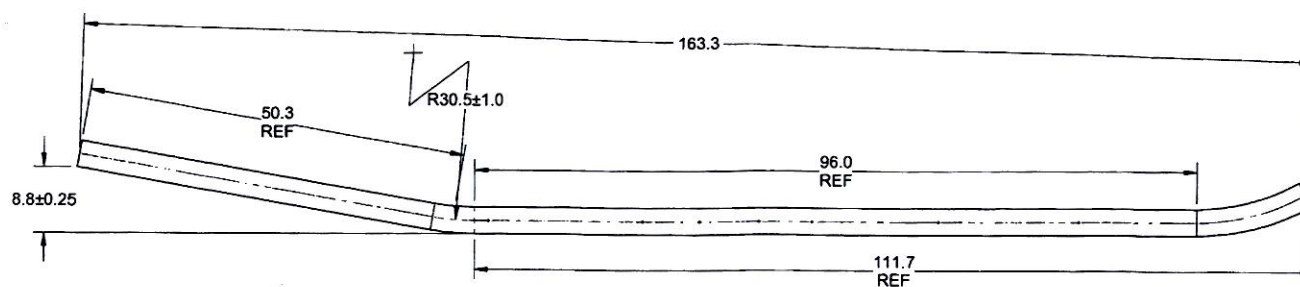
APPROVED

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APPROVED	WM
DE APPR.	DS
DATE	15.11.02

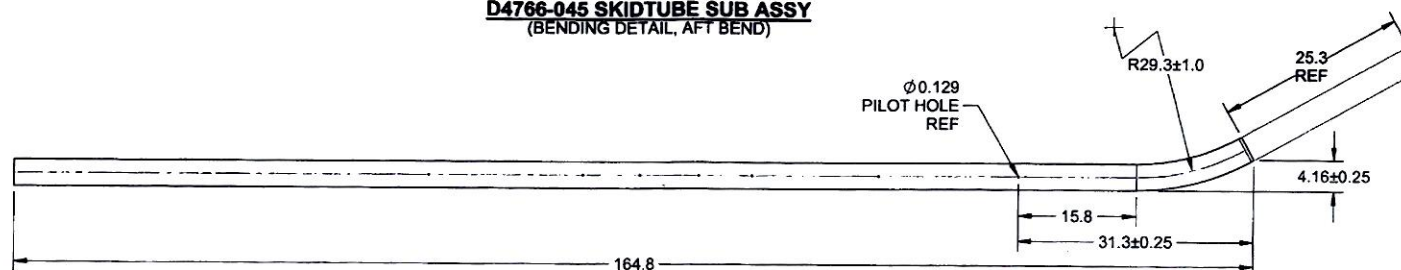
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EUGENE, OR

DRAWING NO.
D4766
TITLE
SKIDTUBE
REV. D
SHEET 4 OF 6
SCALE
NTS

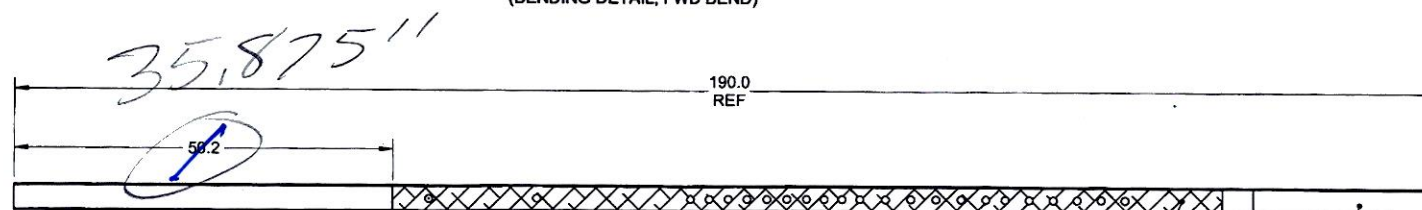
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D4766-045 SKIDTUBE SUB ASSY
(BENDING DETAIL, AFT BEND)



D4766-045 SKIDTUBE SUB ASSY
(BENDING DETAIL, FWD BEND)



D4766-045 SKIDTUBE SUB ASSY
(ASSEMBLY DETAIL)

D5085-1 WEB D4766-1 SKIDTUBE

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: N/A
- 8) INSERT D5085-1 WEB INTO D4766-1 EXTRUSION IN LOCATION SHOWN AND BOND INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX -241/-291 ADHESIVE PER DART QSI 015.

RELEASED
2016-02-04

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DESIGN	AP
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APPROVED	WM
DE APPR.	DS
DATE	15.11.02

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D4766

TITLE

SKIDTUBE

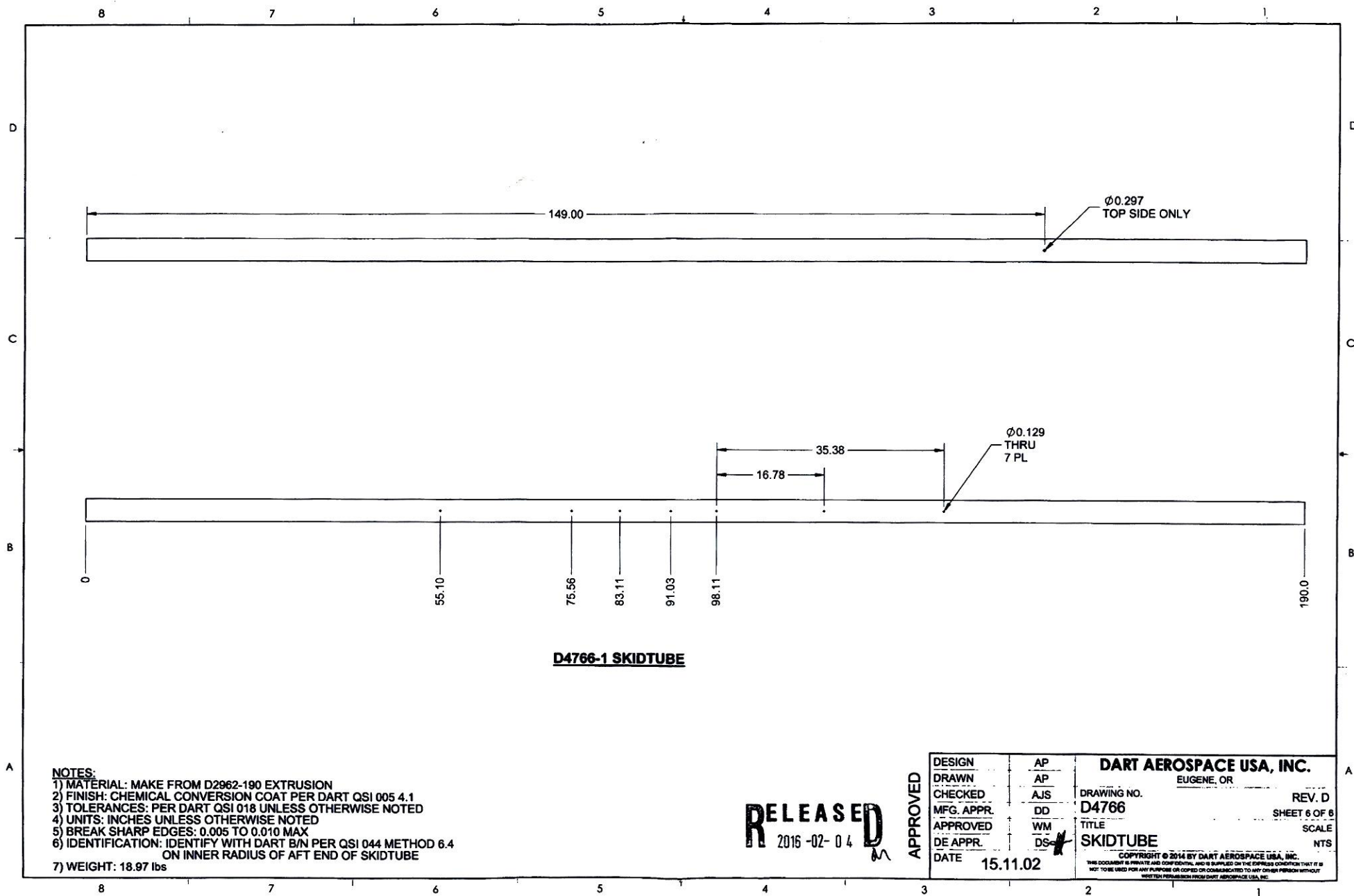
REV. D

SHEET 5 OF 6

SCALE

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NOTES:

- 1) MATERIAL: MAKE FROM D2962-190 EXTRUSION
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY WITH DART B/N PER QSI 044 METHOD 6.4 ON INNER RADIUS OF AFT END OF SKIDTUBE
- 7) WEIGHT: 18.97 lbs

RELEASED
2016-02-04

APPROVED

DESIGN	AP
DRAWN	AP
CHECKED	AJS
MFG. APPR.	DD
APPROVED	WM
DE APPR.	DS
DATE	15.11.02

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D4766

REV. D

SHEET 6 OF 6

TITLE

SKIDTUBE

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